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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,216	12/06/2001	Koji Takahara	018656-254	4993

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EXAMINER	
CURTIS, CRAIG	
ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 09/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/003,216	TAKAHARA ET AL.	
	Examiner	Art Unit	
	Craig Curtis	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. 9/17/04.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that Applicants regard as their invention.

1. Claims 1-18 are is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as their invention. With specific reference to claims 1-5 and 16, the meaning of the phrase limitation "...and transmit the second polarized light component at a second incidence angle..." cannot be ascertained. While it is understood that said second polarized light component ultimately is directed (alt. re-directed) to said dielectric multilayer film following its reflection via said reflecting element, said second polarized light component is in fact transmitted through said dielectric multilayer film prior to its being redirected to re-enter said dielectric multilayer film by said reflecting element, and the direction said second polarized light component takes during *this* portion of its transit through said dielectric multilayer film cannot accurately be characterized as being equivalent to the recited "...second incidence angle." Moreover, it is respectfully suggested that Applicants set forth in the claims (most particularly in independent claims 1, 6, and 10) that said first incidence angle and said second incidence angle are not identical (neither in magnitude nor in sign). Similar indefiniteness issues with respect to the relationship between said first incidence angle and said second incidence angle have been identified with regard to claims 6-15, 17, and 18.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 4, 6-8, 10-14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al. (JP362200320A) in view of Kimura et al. (5,590,942).

Fukushima et al. discloses (see Fig. 1; also see ABSTRACT) the invention as claimed--[a] polarization conversion element/optical system for converting light having a nonuniform plane of polarization to light having a uniform plane of polarization, comprising:

a dielectric multilayer film (15) having a different incidence angle dependency relative to a first polarized light component and a second polarized light component which have mutually intersecting planes of polarization (inherent), so as to transmit the first polarized light component (i.e., P) and reflect the second polarized light component (S) at a first incidence angle, and transmit (however negligibly) the second polarized light component (S) at a second incidence angle (see Fig. 1) ;

a reflecting/diffraction element (11) for reflecting light entering the dielectric multilayer film at a first incidence angle;

a wavelength plate (16) positioned: *medially to* said dielectric multilayer film and said reflecting element (as recited in independent claim 1: See Fig. 1), and *between* said dielectric multilayer film and said diffraction element (as recited in claim 6), including wherein the difference

between said first incidence angle and said second incidence angle is 30^0 or less (see Fig. 1)--**EXCEPT FOR** an explicit teaching wherein said wavelength plate (16) is a quarter-wavelength plate, not a half-wavelength plate.

Kimura et al., however, explicitly teach wherein a quarter-wave plate (521 in Fig. 7) is disposed next to a reflecting element (plate 522). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the polarization conversion element/optical system of **Fukushima et al.** such that it comprise a quarter-wave plate, not a half-wavelength plate, for at least the purpose of producing a uniform plane of polarization.

With specific reference to the recitations in claims 6, 7, 12, & 13, the polarization conversion element/optical system disclosed by the combination and depicted (sans quarter-waveplate) in Fig. 1 of **Fukushima et al.** can be read as meeting both wherein said dielectric multilayer film, quarter-wavelength plate, and diffraction element are *integral* with another (in 10), wherein a substrate is disposed between said dielectric multilayer film and said diffraction element (see 14 in Fig. 1), and wherein said diffraction grating is formed in an element that is distinct from said [quarter-] wavelength plate (cf. elements 11 & 16 in Fig. 1).

With regard to claim 8, please see uppermost left-hand portion of Fig. 1 in **Fukushima et al.**--that is, where said reflective diffraction element (11) and waveplate (16) abut.

With regard to claim 14, please see planar mirror 522.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al. (JP362200320A) in view of Kimura et al. (5,590,942), as applied above to, inter alia, claim 1, and further in view of Wentz (4,515,441).

The combination discloses the invention as set forth above **EXCEPT FOR** an explicit teaching wherein the transmittance of the first polarized light component at the first incidence angle of the dielectric multilayer film [incidentally, said first incidence should be associated with said first polarized with respect to said dielectric multilayer film, not with said dielectric multilayer film alone; i.e., said dielectric multilayer film does not--independent of an incident beam or ray of light--have an incidence angle] is 99% or higher, and the reflectivity of the second polarized light component at the first incidence angle is 99% or higher, and the transmittance of the second polarized light component at the second incidence angle is 95% or higher.

Wentz, however, provides a teaching wherein a dielectric multilayer optical polarizer (18) exhibits an efficiency of transmission of transmitted light is greater than about 95%, with the efficiency of reflection for the oppositely or orthogonally polarized light also being greater than about 95% (see col. 2, ll. 20-25).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the invention of the combination such that the transmittance of the first polarized light component at the first incidence angle of the dielectric multilayer be 99% or higher, and the reflectivity of the second polarized light component at the first incidence angle be 99% or higher, and the transmittance of the second polarized light component at the second incidence angle be 95% or higher, as suggested by **Wentz**, for at least the purpose of minimizing inefficient throughput associated with excessive absorption of light both transmitted through and reflecting off said dielectric multilayer film.

4. Claims 5, 9, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al. (JP362200320A) in view of Kimura et al. (5,590,942), as applied above to, inter alia, claims 1, 6, and 10, and further in view of Steiner et al. (EP 0471109 A1).

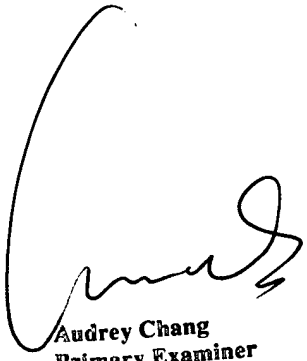
The combination discloses the invention as set forth above **EXCEPT FOR** an explicit teaching wherein the said dielectric multilayer film comprises alternating layers of a first material containing SiO_2 and a second material containing TiO_2 and La_2O_3.

Steiner et al., however, disclose a layer (8 in Fig. 3B) containing various combinations of the oxides SiO_2, La_2O_3, and TiO_2 . It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the invention of the combination such that its dielectric multilayer film comprise alternating layers of a first material containing SiO_2 and a second material containing TiO_2 and La_2O_3, as suggested by **Steiner et al.**, for at least the purpose of achieving a desired transmittance/reflectance performance from said dielectric multilayer film.

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (571) 272-2311. The centralized facsimile phone number for the USPTO is (703) 872-9306.

Any inquiry of a general nature regarding the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.



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Group Art Unit
17 September 2004